LAGB: Additional Surgery Need it? Options and Choices

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Disclosure

Ethicon Endosurgery	*Consultant/ Speaker*
Medtronic	*Speaker/ Advisor*
SAGER	*Consultant*
Olympus	*Consultant/ Speaker*
Boston Scientific	*Advisor*
GI Windows	*Consultant*
Advantage Bariatrics	*Advisor*

Introduction

Approved in 2001, more than ,000 LAGB have been d worldwide

LAGB Failure

Major complication rate of 40% at 10 years

Failure rates 40-50%

Revision rates 20-30%

Mittermair RP. (2009) Results and complications after Swedish adjustable gastric banding: 10 years' experience. Obes Surg 19:1636–1641

QUESTIONS:

1. **TO THE PATIENT**

   When operation was performed

   Why he got that operation

   QOL

QUESTIONS:

2. **TO MYSELF**

Why are we doing this operation

Failure Vs Complication

Pre Vs Actual Status

Do We have a patient??

QUESTIONS:

2. **TO MYSELF**

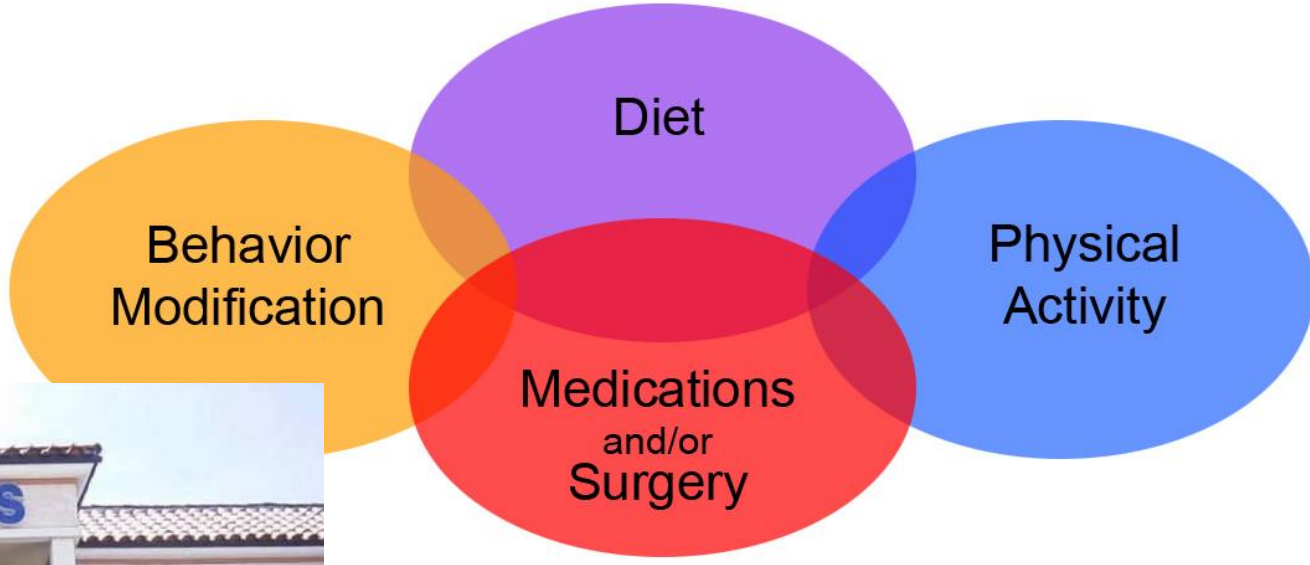
Why are we doing this operation

Failure Vs Complication

Pre Vs Actual Status

Do We have a patient??

COMPONENTS OF EFFECTIVE WEIGHT-MANAGEMENT PROGRAMS

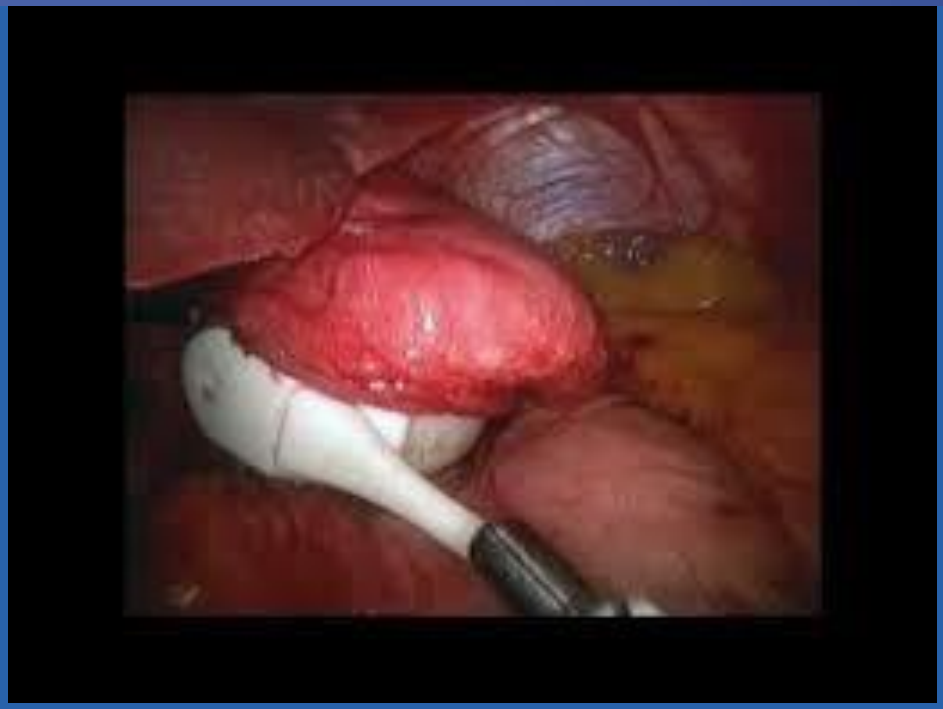


Indications for revisional surgery

Complications

Band prolapse (0.5%-36%)

Pouch dilation



Ponce J. et al. New adjustable gastric bands available in the United States: a comparative study. Surg Obes Relat Dis 2011;7(1):74–9.

Tice JA. et al. Gastric banding or bypass? A systematic review comparing the two most popular bariatric procedures. Am J Med 2008; 121(10):885–93.

Indications for revisional surgery

Complications

GERD

Esophageal motility disorder (30%)

Merrouche M et al. Gastro-esophageal reflux and esophageal motility disorders in morbidly obese patients before and after bariatric surgery. Obes Surg 2007;17(7):894–900.

Indications for revisional surgery

Complications

Band erosion

(0.6%-3%)

Snow JM. Complications of adjustable gastric banding. Surg Clin North Am. 2011 Dec;91(6):1249-64, ix.

Problem

Problem

What procedure to choose?

Alternatives

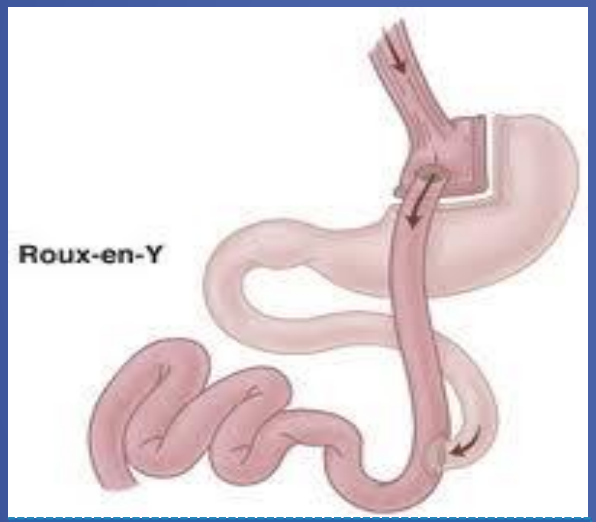
Restrictive procedures

-Rebanding

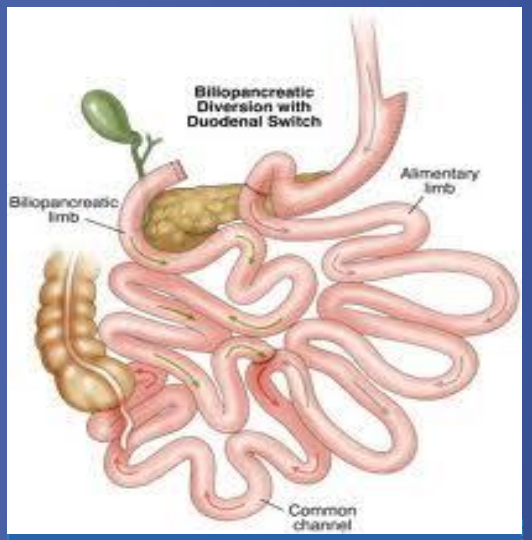
-Laparoscopic sleeve gastrectomy (LSG)

Alternatives

Restrictive and/or malabsorption procedure



LRYGB



BPDDS

Solution

Literature limited

No Clear Algorithm

Surg Endosc
DOI 10.1007/s00464-012-2510-2

Revisional surgery after failed laparoscopic adjustable gastric banding: a systematic review

Ahmad Elnahas · Kerry Graybiel · Forough Farrokhyar · Scott Gmora · Mehran Anvari · Dennis Hong

Received: 29 April 2012 / Accepted: 11 July 2012

Methods

Search in EMBASE,MEDLINE, PsycINFO, and Cochrane Clinical Trials

24 relevant articles

106 conversion to LSG
514 conversion to LRYGB
71 conversion to LBPDDS

LSG

Table 1 Demographic and other relevant data for failed LAGB converted to laparoscopic sleeve gastrectomy

Study	$N = 106$	Mean age (years)	F:M ratio	Mean BMI at revision (kg/m^2)	Time to revision (months)	Operating time (min)	Complication rate (%)	Length of stay (days)
Acholonu et al. [6]	11	46.6	4	38.7	34.7	120	13.3	5.5
Bernante et al. [22]	5	46.6	3	50.5	90	90	0	5
Arapis et al. [24]	26	35.4	6.5	38.5	54	95	15.4	–
Berry et al. [26]	9	39.5	1.3	34.2	–	127	0	–
Awruch et al. [6]	12	35	8.7	35	–	98	0	–
Frezza et al. [23]	10	–	2.3	49.6	–	87	0	3
Weber et al. [17]	10	38	–	31	60	–	0	–
Dapri et al. [24]	23	43.6	1.7	39	51.2	121	3.7	3.2
Weighted mean		40 (12)	9.1	38.8 (6.9)	53.5 (22.8)	106 (31.3)	4.1	4.1 (2.3)

– Data not reported

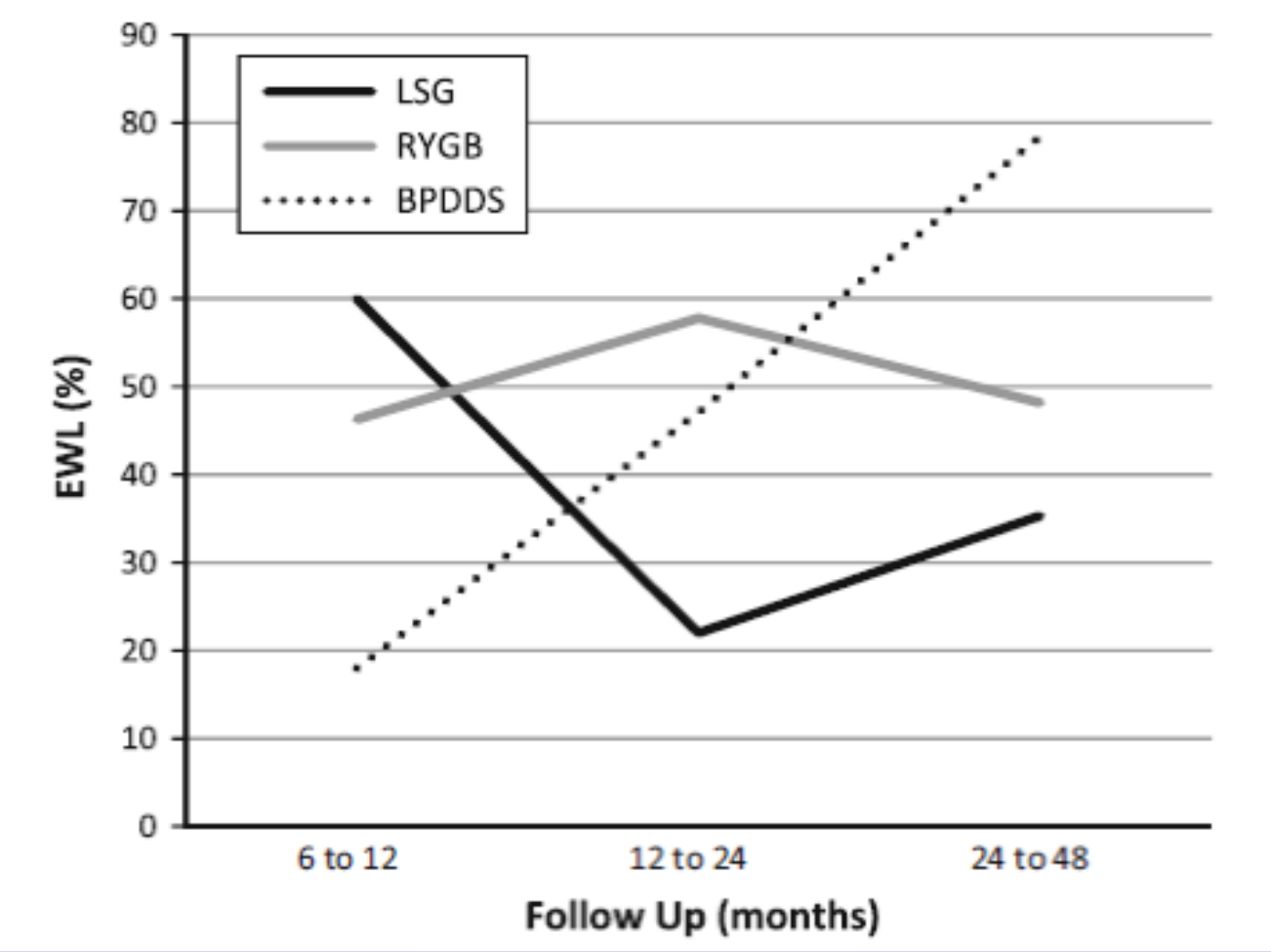
LRYGB

Table 2 Demographic and other relevant data for failed LAGB converted to laparoscopic Roux-en-Y gastric bypass

Study	$N = 514$	Mean age (years)	F:M ratio	Mean BMI at revision (kg/m^2)	Time to revision (months)	Operating time (min)	Complication rate (%)	Length of stay (days)
Awruch et al. [10]	12	35	8.7	35	–	98	0	–
Ardestani et al. [11]	19	42.3	8.5	44.1	27.6	–	10.5	–
te Riele et al. [12]	55	43	8.2	46.8	66.2	100	14.8	4
Espalieu et al. [13]	77	–	–	41	–	158	10	5.2
Topart et al. [14]	54	42.5	10.6	43.2	46.1	128	9	7.7
Fronza et al. [15]	6	42	3.5	38.8	–	249	0	–
Muller et al. [16]	30	42	4	41.9	–	–	7	–
Van Wageningen et al. [8]	26	42.7	3.6	43.8	50.4	194	23	7.9
Weber et al. [30]	32	46	2.56	42	42	215	19	8.9
Gagner et al. [2]	6	40	All F	44.7	34	111	17	–
Spivak et al. [18]	33	43.8	10	42.8	28.2	105	6	2.8
Mognol et al. [19]	70	41	2.63	44.9	42	240	14.3	7.2
Langer et al. [20]	25	38	24	47.6	53	219	12	5
Van Niewenhove et al. [21]	37	42	3.1	42.6	85	166	5.4	4
Topart et al. [29]	32	40.9	9.7	43.1	42.5	135	12.5	7
Weighted mean		42 (10.7)	23.4	43.3 (8.1)	50 (21.6)	162 (37.6)	10.7	6.5 (8.2)

– Data not reported

%EWL


LSG
RYGB
BPDDS
EWL (%)
90
80
70
60
50
40
30
20
10
0
6 to 12
12 to 24
24 to 48
Follow Up (months)

ELSEVIER

CrossMark

Surgery for Obesity and Related Diseases 10 (2014) 1116–1122

SURGERY FOR OBESITY AND RELATED DISEASES

Original article

Laparoscopic sleeve gastrectomy as a revisional procedure for failed gastric banding: lessons from 300 consecutive cases

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Abstract

Background: Laparoscopic adjustable gastric banding (LAGB) is a common bariatric procedure associated with a high rate of weight loss failure and/or complications in the long term. The objective of this study was to test the hypothesis that the conversion of failed LAGB into laparoscopic sleeve gastrectomy (LSG) is not associated with an increased risk of postoperative complications and leads to weight loss results that are comparable to those obtained with a primary LSG.

Methods: We retrospectively analyzed the results of a prospective series of 1360 LSG regarding patient demographics, the indication for revision morbidity, the percentage of excess weight loss, and the rate of postoperative complications.

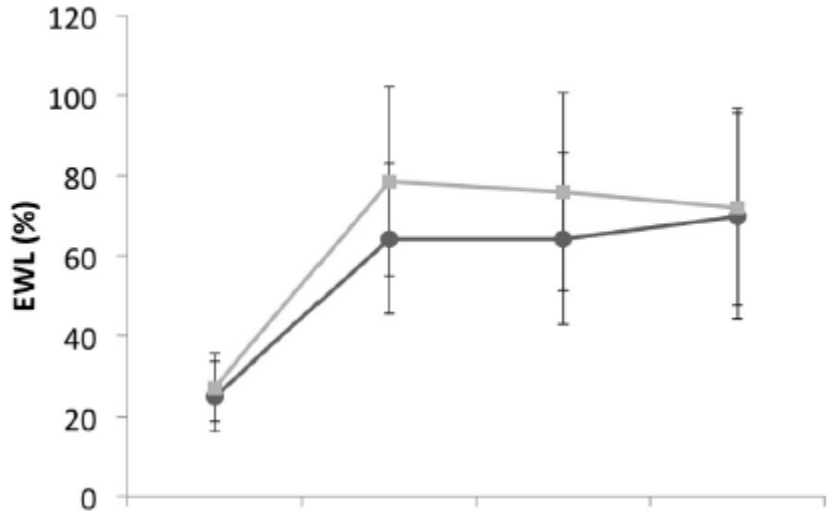
Results: The primary LSG group contained 1060 patients and the LAGB to LSG group contained 300 patients. The rate of postoperative complications was 4.5% in the primary LSG group and 2% in the LAGB to LSG group. Two patients died in the LSG group (1 pulmonary embolus, 1 myocardial infarction). There was no significant difference with respect to the rate of leak, which was 1% in the LAGB to LSG group and 1.6% in the primary LSG group. There was a greater weight loss after primary LSG, mean % excess weight loss of 75.9% ± 21.4 at a mean interval of 29 ± 19.8 months, versus 62.6% ± 22.2 at a mean interval of 35 ± 24 months after LAGB to LSG ($P = .008$). There were 72.1% and 59.2% of patients available for follow-up after primary LSG at 24 and 60 months respectively, versus 69.3% and 55.4% after LAGB to LSG.

Conclusion: This study indicates that the risk of leak after LSG was not increased after conversion failed LAGB into LSG when performed as a 2-step procedure. (Surg Obes Relat Dis 2014;10:1116–1122.)

Keywords: Failed gastric banding; Revision procedure; Laparoscopic sleeve gastrectomy

Table 2
Complications in the LAGB to sleeve gastrectomy (SG) group compared to the primary SG

Complication	SG	LAGB to SG	*P* value
Leak	17 (1.6%)	3 (1%)	.47
Intra-abdominal abscess	4 (.38%)	0	.29
Stenosis	2 (.19%)	2 (.67%)	.168
Bleeding	19 (1.79%)	1 (.33%)	.069
Pancreatitis	1 (.09%)	0	.6
Humeral vein thrombosis	1 (.09%)	0	.6
Portal thrombosis	1 (.09%)	0	.6
Portal phlebitis	1 (.09%)	0	.6
Twist	1 (.09%)	0	.6
Pleural effusion	1 (.09%)	0	.6
Total	48 (4.53%)	6 (2%)	.055



No. of Subjects / EWL (%)				
LAGB to SG	300 / 25	209 / 64	151 / 64	48 / 70
SG	1057 / 27	774 / 79	507 / 76	84 / 72

Fig. 2. Postsurgical weight loss. Mean excess weight loss (EWL) (%) in the LAGB to sleeve gastrectomy (SG) group (round mark) compared to the primary SG group (square mark) during their follow-up periods.

Obesity Surgery (2021) 31:1603–1611
https://doi.org/10.1007/s11695-020-05167-y

ORIGINAL CONTRIBUTIONS

How Far Can Our Expectations Go on Revisional Bariatric Surgery After Failed Adjustable Gastric Banding?

André Pereira [1,2] · André Costa Pinho [2,3] · Hugo Santos Sousa [2,3] · Eduardo Lima da Costa [3] · Sara Rodrigues [1,2] · Elisabete Barbosa [1,2] · John Preto [3] · CRI-O Group

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n:200

2020

Pereira A, Pinho AC, Sousa HS, et al. How Far Can Our Expectations Go on Revisional Bariatric Surgery After Failed Adjustable Gastric Banding?. *Obes Surg*. 2021;31(4):1603-1611. doi:10.1007/s11695-020-05167-y

Table 1 Global data

	RYGB	SG	rRYGB	rSG
Female:male (% ♀)	45:5 (90%)	41:9 (82%)	45:5 (90%)	43:7 (86%)
Age (years, mean ± SD)	43.0±9.8	45.0±11.5	43.7±9.8	47.1±9.7
Comorbidities				
Comorbidities—pre-AGB			15 (30.6%)	22 (46.8%)
Comorbidities—pre-RYGB/SG	36 (72%)	36 (72%)	27 (54%)	35 (70%)
Resolution/improvement of comorbidities	28 (77.8%)	18 (52.9%)	19 (70.4%)	8 (23.5%)
Weight loss outcomes				
BMI—pre-AGB (kg/m^2, mean ± SD)			46.6±6.0	46.3±7.1
BMI—pre-RYGB/SG (kg/m^2, mean ± SD)	44.5±5.4	44.8±7.6	44.3±5.9	43.8±8.0
BMI—last FU (kg/m^2, mean ± SD)	30.7±4.4	34.2±6.2	33.3±5.6	33.9±6.6
Weight loss (kg, mean ± SD)	36.1±10.2	27.5±12.3	29.5±13.9	26.3±15.6
%EWL (mean ± SD)	73.0±17.8	54.8±21.6	58.6±25.5	55.0±30.6
Cumulative weight loss (kg, mean ± SD)	36.1±10.2	27.5±12.3	35.7±16.7	33.3±16.3
Cumulative %EWL (mean ± SD)	73.0±17.8	54.8±21.6	62.4±24.3	60.2±25.9

AGB adjustable gastric banding, *FU* follow-up, *RYGB* Roux-en-Y gastric bypass, *SG* sleeve gastrectomy, *r* revisional, *BMI* Body Mass Index

Pereira A, Pinho AC, Sousa HS, et al. How Far Can Our Expectations Go on Revisional Bariatric Surgery After Failed Adjustable Gastric Banding?. *Obes Surg*. 2021;31(4):1603-1611. doi:10.1007/s11695-020-05167-y

Table 3 Morbidity and mortality

					p value			
	RYGB	SG	rRYGB	rSG	RYGB vs. SG	RYGB vs. rRYGB	SG vs. rSG	rRYGB vs. rSG
Overall complications (*n*, %)	7 (14%)	8 (16%	9 (18%)	5 (10%	n.s.	n.s.	n.s.	n.s.
Early complications (≤90 days; *n*, %)	6 (12%)	4 (8%)	2 (4%)	1 (2%)	n.s.	n.s.	n.s.	n.s.
Late complications (>90 days, *n*, %)	1 (2%)	4 (8%)	7 (14%)	4 (8%)	n.s.	n.s. (0.059)	n.s.	n.s.
Mortality (*n*, %)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	–	–	–	–
Early complications discriminated					*Treatment*			
Stenosis of the gastro-jejunal anastomosis	1				Dilatation with an endoscopic balloon			
Peritoneal abscess	1	1			Antibiotic therapy			
Peritoneal abscess	1				Drainage though interventional radiology + antibiotic therapy			
Peritoneal haematoma	1				Conservative treatment			
Dehiscence of trocar wound	1				Wound care			
Post-operative respiratory dysfunction	1	1	1		Medical treatment			
Acute pancreatitis		1			Medical treatment			
Splenic laceration		1			Conservative treatment (ICU)			
Haemoperitoneum			1	1	Surgical re-intervention (laparoscopy)			
Late complications discriminated					*Treatment*			
GERD	1				Medical treatment			
Incisional hernia		4	6	3	Surgery			
Small bowel obstruction—adhesions			1		Surgery (laparotomy)			
GERD				1	Surgery (conversion to rRYGB)			

RYGB Roux-en-Y gastric bypass, *SG* sleeve gastrectomy, *n.s.* not significant, *r* revisional, *BMI* Body Mass Index, *ICU* intensive care unit, *GERD* gastroesophageal reflux disease

rRYGB Vs RSG
Comorbidities improvement
OR (OR 6.988; CI95% 2.185–22.348; p < 0.001)

Pereira A, Pinho AC, Sousa HS, et al. How Far Can Our Expectations Go on Revisional Bariatric Surgery After Failed Adjustable Gastric Banding?. *Obes Surg*. 2021;31(4):1603-1611. doi:10.1007/s11695-020-05167-y

Conclusion

- "Revisional surgeries are safe procedures with adequate weight loss outcomes in this difficult set of patients. The choice of revisional procedure may not influence weight loss outcomes, but rRYGB seems to be a better option regarding comorbidities' resolution."

- "Regarding revisional surgery, weight loss outcomes were not related to the type of procedure (rRYGB or rSG). However, when a revisional procedure is considered, rRYGB seems to be a better option after failed AGB, because it seems to achieve better outcomes regarding improvement/ resolution of the obesity-related comorbidities"

Pereira A, Pinho AC, Sousa HS, et al. How Far Can Our Expectations Go on Revisional Bariatric Surgery After Failed Adjustable Gastric Banding?. *Obes Surg*. 2021;31(4):1603-1611. doi:10.1007/s11695-020-05167-y

J Metab Bariatr Surg. 2022 Dec;11(2):49-53
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pISSN 2287-2930·eISSN 2508-5956

Journal of Metabolic and Bariatric Surgery JMBS

Review Article

Check for updates

Revisional Surgery After Adjustable Gastric Banding: Sleeve Gastrectomy or Gastric Bypass?

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OPEN ACCESS

Review

2022

Park YS. Revisional Surgery After Adjustable Gastric Banding: Sleeve Gastrectomy or Gastric Bypass?. *J Metab Bariatr Surg*. 2022;11(2):49-53. doi:10.17476/jmbs.2022.11.2.49

Table 1. Summary of key articles

Author (year)	County	Control vs. Comparison groups	Safety outcomes	Weight loss outcomes
Noel et al. (2014) [7]	France	Primary SG (n=1,060) vs. 2-step conversion of SG from AGB (n=300)	Postoperative complications: 4.5% vs. 2.0% (P=0.055) Leak: 1.6% vs. 1.0% (P=0.47) Bleeding: 1.79% vs. 0.33% (P=0.069)	%EWL: 75.9±21.4% at a mean interval of 29±19.8 months vs. 62.6±22.2% at a mean interval of 35±24 months (P=0.008)
Aminian et al. (2015) [8]	United State	Primary SG (n=10,997) vs. 1-step conversion of SG from AGB (n=323)	30-day morbidity: 5.4% vs. 6.8% (P=0.29) 30-day reoperation: 1.5% vs. 2.2% (P=0.32) 30-day readmission: 3.7% vs. 4.3% (P=0.61) Hospital stay >2 weeks: 0.3% vs. 0 (P=0.32) 30-day mortality: 0.1% vs. 0.3% (P=0.17) Operative time: 98.5±42.8 minutes vs. 130.0±53.7 minutes (P<0.001)	(–)
Theunissen et al. (2016) [9]	Netherlands	Primary RYGB (n=1,020) vs. Redo RYGB (n=107)	Overall complications: 9.3% vs. 16.8% (P<0.05) Major complications: 2.3% vs. 2.8% (P=n.s.)	BMI change at 1 year: 14.3±3.7 kg/m^2 vs. 9.0±4.9 kg/m^2 (P<0.001) %TWL: 32.5±6.9% vs. 21.5±9.9% (P<0.001)
		1-step RYGB (n=71) vs. 2-step RYGB (n=36)	Overall complications: 16.9% vs. 16.7% (P=n.s.) Major complications: 1.4% vs. 5.6% (P=n.s.)	No significant differences in weight loss results (data not suggested)
Janik et al. (2019) [10]	United State	1-step RYGB (n=1,354) vs. 1-step SG (n=1,354) (after matching)	Operative time: 151±58 minutes vs. 113±45 minutes (P<0.001) Leak: 2.07% vs 1.18% (P=0.070) Bleeding: 2.66% vs 0.44% (P<0.001) 30-day readmission: 7.46% vs 3.69% (P<0.001) 30-day reoperation: 3.25% vs 1.26% (P<0.001) Hospital stay: 2.3±2.8 days vs. 1.8±2.1 days (P<0.001)	(–)
Creange et al. (2018) [12]	United State	AGB to RYGB (n=192) vs. AGB to SG (n=283)	Reoperation: 7.3% vs. 1.4% (P=0.002) Readmission: 7.3% vs. 3.5% (P=0.087) Hospital stay: 3.33 days vs. 2.11 days (P<0.001)	%EBMIL: 57.8±26.0 (n=49) vs. 29.3±40.6 (n=51) (P<0.001) (2 years) 55.3±32.6 (n=37) vs. 40.1±25.4 (n=31) (P=0.038) (3 years) 55.9±22.4 (n=20) vs. 7.0±10.4 (n=5) (P<0.001) (5 years) %TWL: 23.4±11.2 vs. 12.6±14.2 (P<0.001) (2 years) 22.7±12.0 vs. 15.4±9.4 (P=0.007) (3 years) 24.8±9.9 vs. 7.0±10.4 (P=0.002) (5 years)

SG = sleeve gastrectomy, AGB = adjustable gastric banding, %EWL = percentage excess weight loss, n.s. = not significant, RYGB = Roux-en-Y gastric bypass, %TWL = percentage total weight loss, BMI = body mass index.

Complications rate
2%-16.8%

ark YS. Revisional Surgery After Adjustable Gastric Banding: Sleeve Gastrectomy or Gastric Bypass?. *J Metab Bariatr Surg*. 2022;11(2):49-53. doi:10.17476/jmbs.2022.11.2.49

Conclusion

- 1-step revisional bariatric surgery after AGB can be considered if reoperation is performed because of insufficient weight loss or weight regain.
- Revisional RYGB can achieve more effective postoperative weight loss, although it may be associated with a higher risk of morbidity, reoperation, and readmission to hospital.
- The type of revisional surgery should be selected following discussions with the patient regarding the advantages and disadvantages associated with each procedure.

Park YS. Revisional Surgery After Adjustable Gastric Banding: Sleeve Gastrectomy or Gastric Bypass?. *J Metab Bariatr Surg*. 2022;11(2):49-53. doi:10.17476/jmbs.2022.11.2.49

Langenbeck's Archives of Surgery (2023) 408:441
https://doi.org/10.1007/s00423-023-03174-y

RESEARCH

Roux-en-Y gastric bypass and sleeve gastrectomy as revisional bariatric procedures after adjustable gastric banding: a retrospective cohort study

Hugo Santos-Sousa[1,2] · Jorge Nogueiro[1,3] · Luis Lindeza[1] · Maria Neves Carmona[1] · Filipe Amorim-Cruz[1] · Fernando Resende[1,2] · André Costa-Pinho[1,2] · John Preto[2] · Bernardo Sousa-Pinto[1,4,5] · Silvestre Carneiro[1,3] · Eduardo Lima-da-Costa[2]

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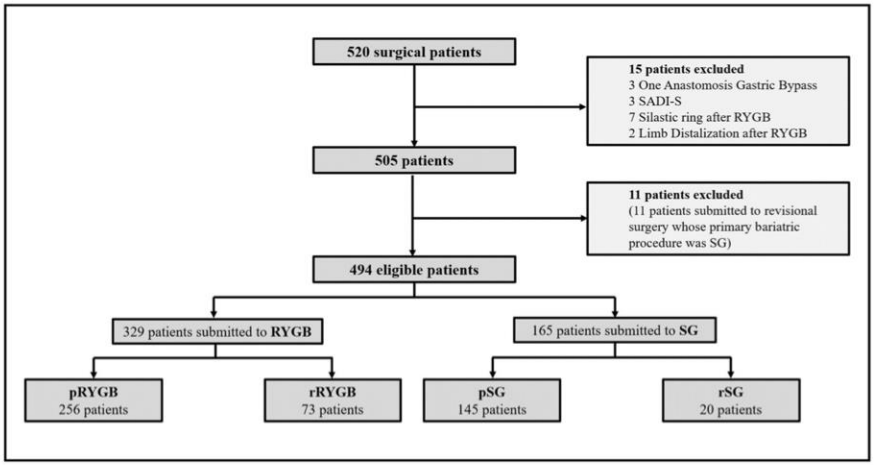
n:494

2023



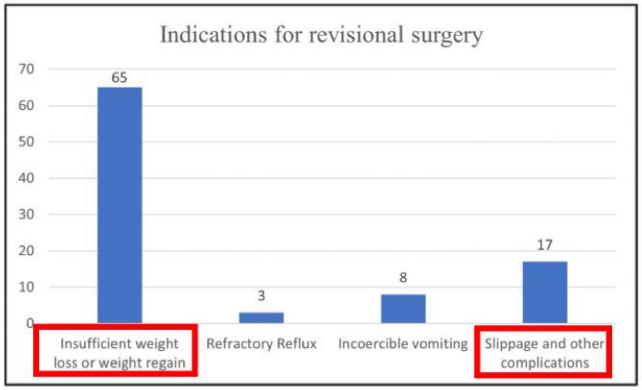


Table 1 Demographic characteristics

	pRYGB ($n=256$)	pSG ($n=145$)	rRYGB ($n=73$)	rSG ($n=20$)	*p-value*		
					pRYGB vs. rRYGB	pSG vs. rSG	rRYGB vs. rSG
Age (years); median [IQR]	45.00 [IQR 38.25–53.00]	44.00 [IQR 35.50–54.00]	49.00 [IQR 42.00–58.00]	51.00 [IQR 44.00–58.25]	0.001	0.015	0.653
Female; *n* (%)	224 (87.5%)	103 (71.0%)	67 (91.8%)	17 (85.0%)	0.313	3.189	0.399
Preoperative BMI (kg/m^2); median [IQR]	42.27 [IQR 39.30–45.20]	43.78 [IQR 39.93–49.12]	42.67 [IQR 39.32–45.46]	44.63 [IQR 39.61–49.04]	0.760	0.759	0.180
Preoperative comorbidities							
HTN; *n* (%)	119 (46.5%)	72 (49.7%)	36 (49.3%)	10 (50.0%)	0.669	0.977	0.957
T2DM; *n* (%)	74 (28.9%)	33 (22.8%)	21 (28.8%)	3 (15.0%)	0.982	0.570	0.213
Dyslipidemia; *n* (%)	119 (46.5%)	69 (47.6%)	33 (45.2%)	10 (50.0%)	0.847	0.839	0.102
OSA; *n* (%)	48 (14.6%)	29 (20.0%)	10 (3.0%)	6 (30.0%)	0.318	0.380	0.703

pRYGB, primary Roux-en-Y gastric bypass; *pSG*, primary sleeve gastrectomy; *rRYGB*, revisional Roux-en-Y gastric bypass; *rSG*, revisional sleeve gastrectomy; *BMI*, body mass index; *HTN*, arterial hypertension; *T2DM*, diabetes mellitus type 2; *OSA*, obstructive sleep apnea

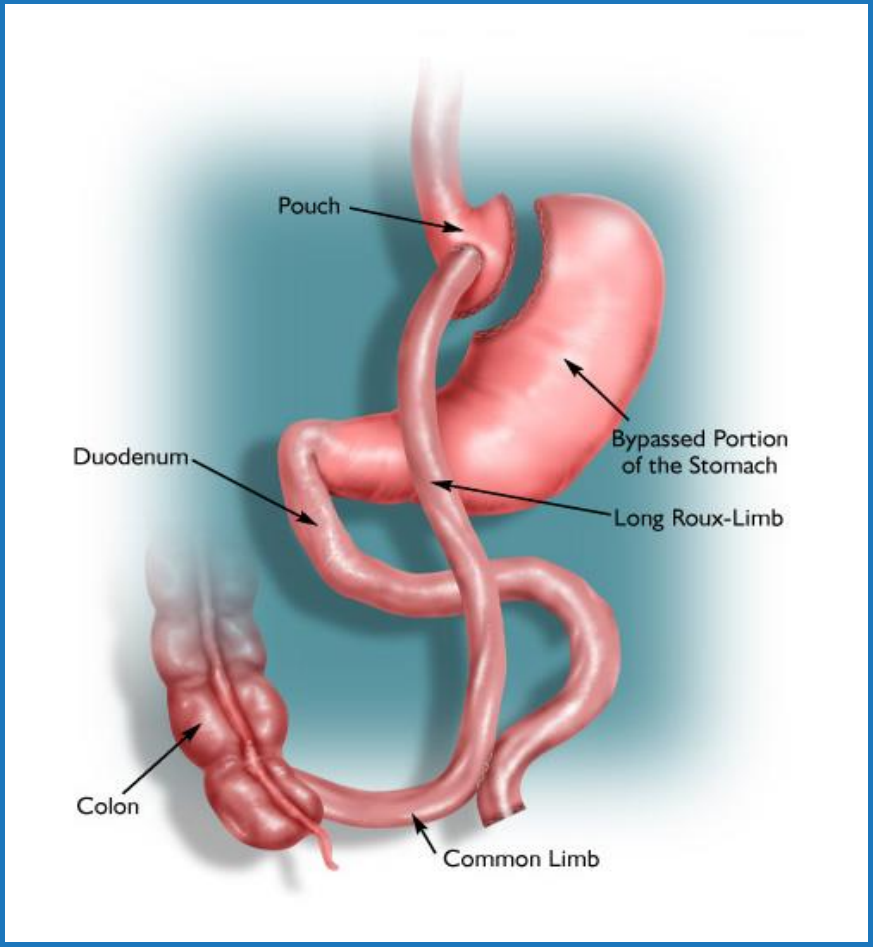
LAGB / LSG NO INDICATIONS.

WHY IS SO IMPORTANT?

1. Diabetes???????
2. Super Super Obese????
3. Significant Hiatal Hernias???
4. Sweet Eaters, Greasers??????
5. GERD / BARRETT'S

WHAT WE DO?

- **BAND NEVER WORKED**
- **BAND DID NOT GIVE THE EXPECTED RESULTS**
- **BAND BROUGHT COMPLICATIONS LIKE SEVERE REFLUX,MOTILITY.**


Pouch
Bypassed Portion of the Stomach
Duodenum
Long Roux-Limb
Colon
Common Limb

WHAT TO DO? WHAT WE DO?

- **BETTER PATIENT SELECTION**
- **LESS MORBIDITY**
- **BETTER RESULTS**

TWO STEPS

- When?
- Why?

ELSEVIER

CrossMark

Surgery for Obesity and Related Diseases 11 (2015) 386–392

SURGERY FOR OBESITY AND RELATED DISEASES

Original article

Safety of one-step conversion of gastric band to sleeve: a comparative analysis of ACS-NSQIP data

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Abstract

Background: The conversion rate of laparoscopic adjustable gastric banding (LAGB) to laparoscopic sleeve gastrectomy (LSG) has increased during recent years. The safety profile of one-step conversion of LAGB to LSG is not clear from the current literature.

Methods: Using the database of the American College of Surgeons National Surgical Quality Improvement Program (ACS-NSQIP), morbidly obese patients undergoing primary LSG and conversion of LAGB to LSG in one-step between 2010 and 2012 were identified. Perioperative outcomes (including 30-day composite rate comprised of 18 postoperative adverse events) were compared between groups using a univariate cross-sectional analysis.

Results: Data of 11,320 patients (10,997 primary LSG and 323 LAGB to LSG) were analyzed. The LAGB-to-LSG group had better preoperative health status, including significantly lower body mass index, American Society of Anesthesiologists scores, and prevalence of diabetes and hypertension. Operative time for the LAGB–to-LSG group (130.0 ± 53.7 min) was significantly longer than primary LSG group (98.5 ± 42.8 min, $P < .001$). The 30-day composite adverse event rate was 6.8% in the LAGB-to-LSG group and 5.4% in the primary LSG group ($P = .29$). The rate of minor complications, including urinary tract infection and wound infection were significantly higher in the revisional surgery group. Thirty-day rates of other postoperative complications, reoperation, readmission, mortality, and length of hospital stay were comparable between the 2 groups.

Conclusions: This national data suggests that conversion of LAGB to LSG in a single stage has comparable safety to primary LSG. In this study, improved preoperative health status of patients in the revisional group may serve as an equalizer with regards to postoperative outcomes of conversion to LSG. (Surg Obes Relat Dis 2015;11:386–392.)

Keywords: Gastric banding; Sleeve gastrectomy; Conversion; Revision; Reoperation; Complication; Weight loss; Bariatric surgery

Studies reporting revisional surgery after LAGB

Study	1-step n of patients /n of leaks (%)	2-step n of patients /n of leaks (%)	Mean interval (mo)	Complications rate n (%)	Leak rate n (%)
Bernante et al. [16]	8	0	NA	0	0
Tucker et al. [19]	10 / 1 (10)	0	NA	2 (20)	1 (10)
Acholonu et al. [17]	13 / 1(7.7)	2	12	2 (13.3)	1 (6.7)
Berry et al. [18]	9	0	NA	0	0
Dapri et al. [20]	27	0	NA	1 (3.7)	0
Iannelli et al. [31]	0	41 / 1 (2.4)	3	5 (12.2)	1 (2.4)
Uglioni et al. [22]	29	0	NA	1 (3.4)	0
Foletto et al. [23]	36 (NR)	16 (NR)	3	4 (7.7)	1 (1.9)
Gagnière et al. [24]	14 / 2 (14.3)	17 / 3 (17.6)	6	10 (32.3)	5 (16.1)
Goitein et al. [21]	26 / 2 (7.7)	20	24	3 (6.5)	2 (4.3)
Jacobs et al. [25]	26	0	NA	0	0
Berende et al. [11]	15 / 5 (33.3)	13	3	9 (32.1)	5 (17.9)
Rebibo et al. [26]	46	0	NA	4 (8.7)	2 (4.3)
Yazbek et al. [27]	90 / 5 (5.6)	0	NA	8 (8.9)	5 (5.5)
Kahn et al. [29]	17 / 2 (11.8)	3	3	3 (15)	2 (10)
Alqahtani et al. [28]	56	0	NA	2 (3.6)	0
Present series, 2013	0	293 / 3 (1)	3	6 (2.1)	3 (1)
Total	422 (18)	405 (7)		60 (7.3)	28 (3.4)
Mean leak rate	4.3 %*	1.7 %*			

NA = not applicable; NR = not reported.
Only studies reporting clearly which approach (1-step or 2-step) was chosen were included in the review of the literature.
*$P < .05$

16 studies reporting conversion of failed LAGB to LSG

15 studies with 1-step approach (total 422 patients): leak rate 4.3%
8 studies with 2-step approach (total 405 patients): leak rate 1.7%
"This data indicates that the 2-step approach may reduce the risk of leak (P=0.033)"

Key Differences

1 step

- Easy surgery
- Insurance approval
- Higher ASA

- Lower BMI
- Lower ASA
- Band body guides the plane

2 steps

- Pouch dilation
- Dense adhesions/ Thick capsule
- Planes blurred (gastrogastric fundoplication

- One does not like what one sees

- Dilation resolved
- Less and thinner scar
- Thinner capsule

RESULTS

- **3876 primary LAGBs performed (12 year period)**

21.6% patients underwent revisional surgery

Band Removal

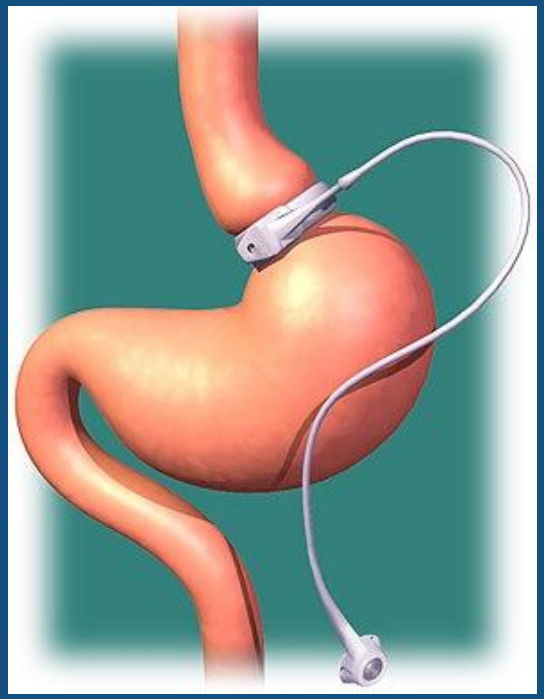
- Removals occurred as early as **2 months** after initial placement to as late as **130 months** after placement

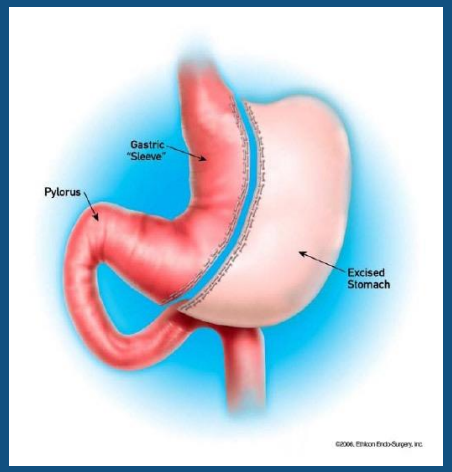
Reasons for Band Removal

	Percent
Failure of Weight Loss*	**57%**
Prolapse**	**21.2%**
Erosions	**8.8%**
Patient Desire	6.3 %
Reflux/ulcer disease	5.1%
Intractable nausea and vomiting	1.8%

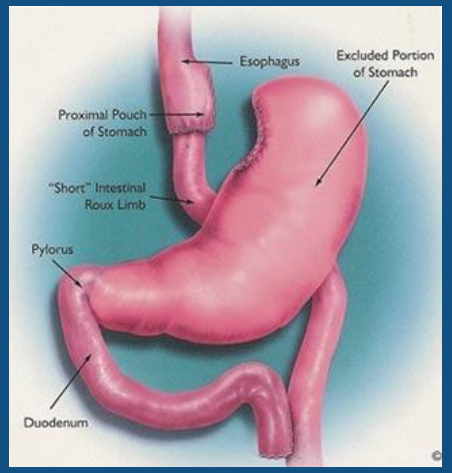
Conversions

18.3%





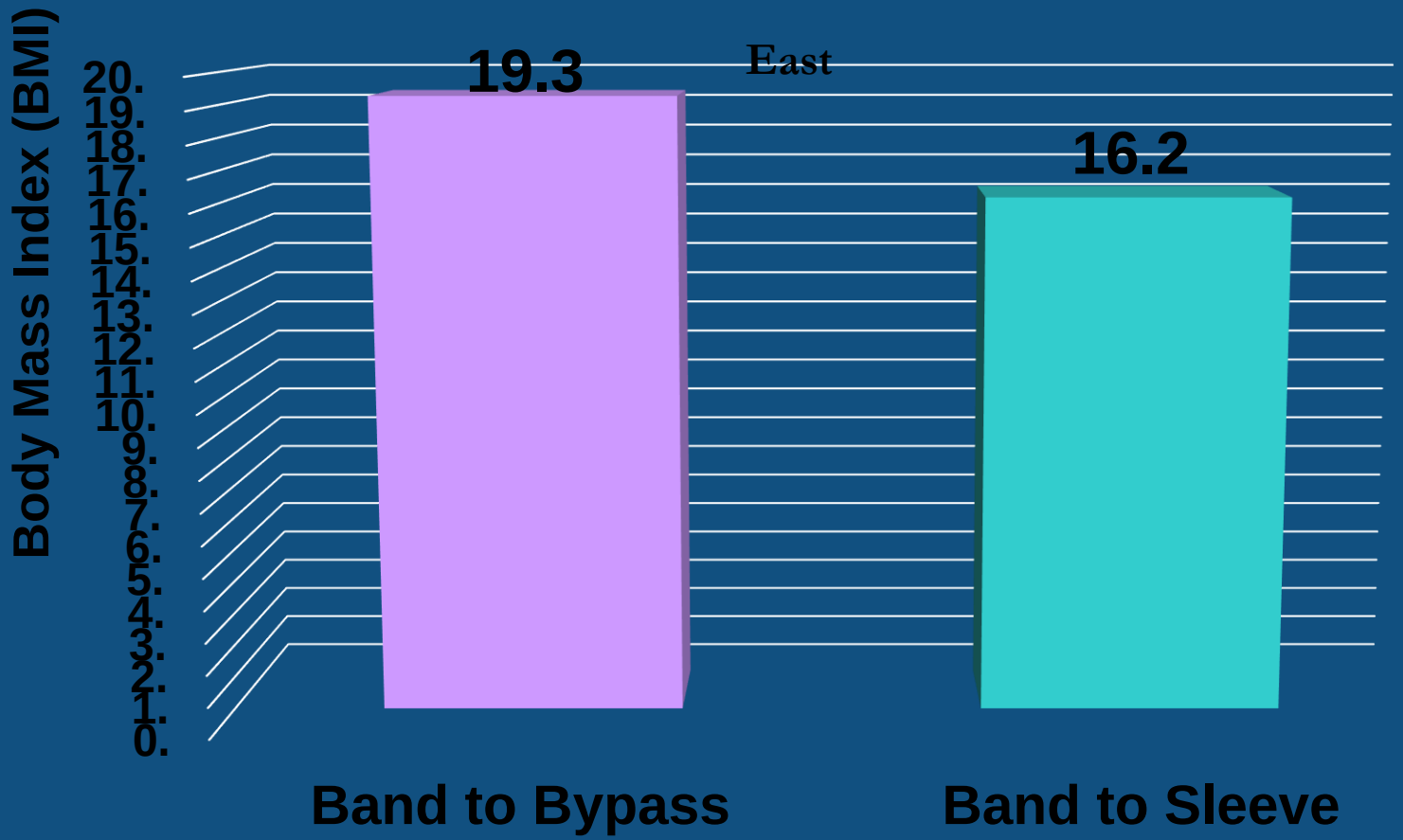
57%



43%

Conversions

18 months post revision



Conclusion

- **Re-operative surgery after LAGB = 21.6%**
- **Removals are the primary reason =**
  - 57% due to inadequate weight loss and patient preference
  - 21.2% due to band prolapse
  - 8.8% secondary to erosion

- **Conversions = 18.3%**
- **Have shown to be successful and should be considered as a viable option**
- **Selection of revisional surgery may be oriented by previous results**

Recommendations

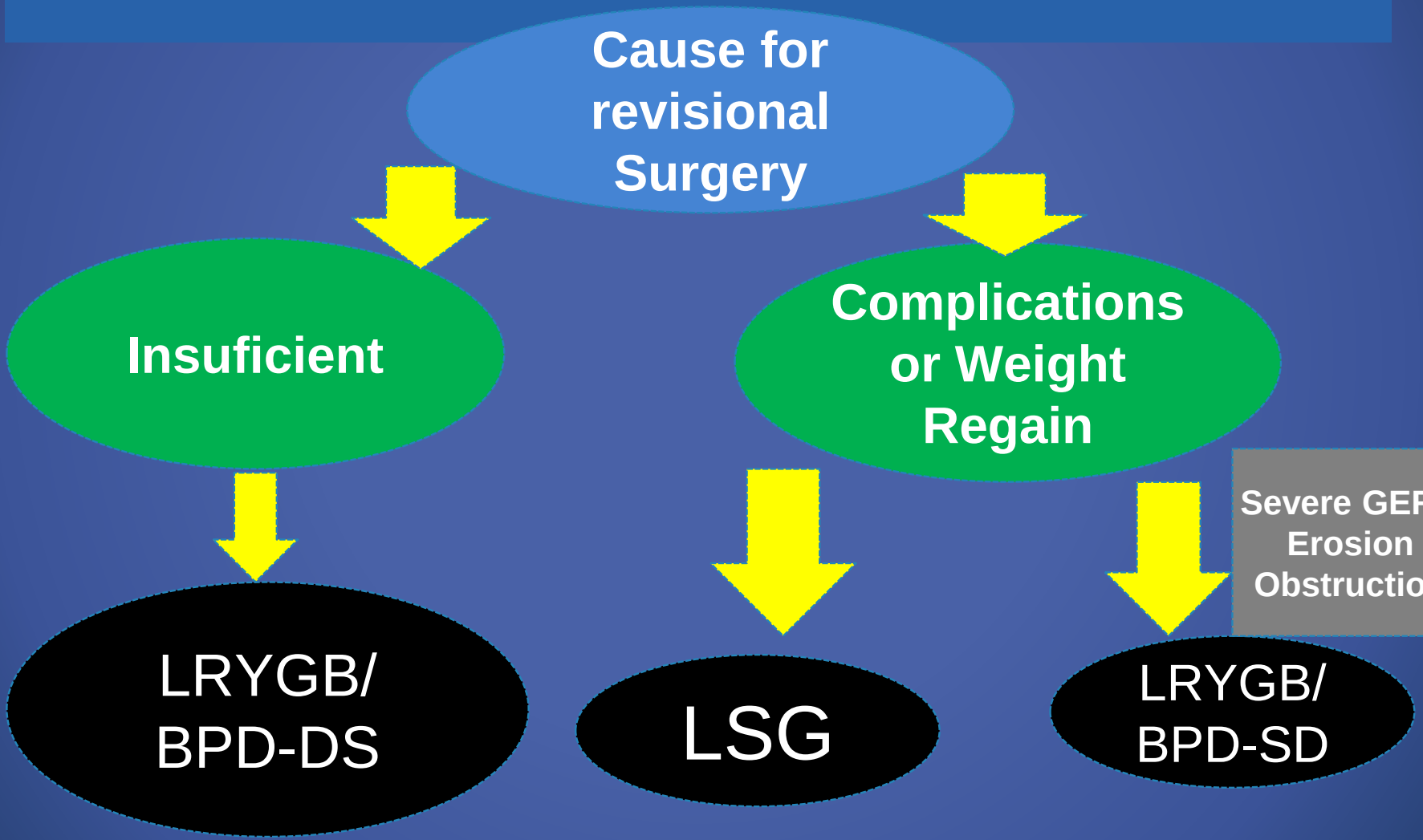
Intraoperative findings

Patient History

Cause of Revisional Surgery

Zundel N, Hernandez JD (2010) Revisional surgery after restrictive procedures for morbid obesity. Surg Laparosc Endosc Percutan 20(5):338–343

Recommendations



Zundel N, Hernandez JD (2010) Revisional surgery after restrictive procedures for morbid obesity. Surg Laparosc Endosc Percutan 20(5):338–343

Your Choice

Sleeve Gastrectomy

Low morbidity

Low %EWL

LRYGB/ BPD-DS

High morbidity

High %EWL